ABSTRACT

SUPPRESSION OF CORTISOL LEVELS AFTER MEGADOSE METHYLPRDNISOLONE THERAPY IN PEDIATRIC PATIENT WITH LUPUS NEPHRITIS

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Background: Lupus nephritis (LN) is a life-threatening manifestation of Systemic Lupus Erythematosus (SLE). Megadose methylprednisolone is a glucocorticoid that has been widely used to treat aggressively LN. The use of megadose methylprednisolone can cause suppression in HPA axis that characterized by insufficiency of cortisol levels in the body, besides its effectiveness. Depletion in cortisol levels can result in dehydration, hypotension, changes in mental status, hypoglycemia and even death.

Objective: To analyze suppression in cortisol levels as an effect of HPA axis suppression after megadose methylprednisolone (MP) treatment in pediatric patients with lupus nephritis.

Method: A prospective observational design was conducted in this study. The cortisol levels of 21 samples were measured at day 1 before megadose MP treatment and day 4 after three days of MP treatment. Cortisol serum was collected from blood sample which obtained in the morning at 06.00 – 10.00 a.m. based on selected peak levels in circadian rhythm. Data was collected at the period of July to September 2018. Samples were analyzed by using the immunoassay method.

Results: Seventeen patients consisted of 9 boys and 8 girls aged between 6-18 years old were recruited in this study. Four of them were treated again in the next cycle of therapy. Most patients (42%) were in the second cycle of megadose MP treatment. Cortisol levels significantly increased from 18.77 ± 24.39 µg/dL to 81.47 ± 124.38 µg/dL after the megadose MP treatment ($p < 0.05$). In addition, patients did not show any adrenal insufficiency symptoms such as weakness or acute dehydration. There were 57% patients who had elevated blood pressure after treatment, while the increased blood glucose was still in the normal range. Proteinuria was reduced by megadose MP treatment, but 10% patients had nausea as the common adverse effect of MP treatment.

Conclusion: Megadose MP treatment did not cause suppression in cortisol levels. Both the acute and delayed phases of feedback mechanism in the HPA axis might play the major role of the elevated cortisol in this study. Megadose MP therapy had a good outcome in pediatric patients with LN.

Keywords: Cortisol levels, HPA axis suppression, methylprednisolone pulse, megadose methylprednisolone, glucocorticoid, lupus nephritis, pediatric patient